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ABSTRACT

The general objective of this study was to determine the effects on maternal teaching styles of a weekly home-visit intervention program designed to further effective parenting of children aged 0-5, in low-income, low-education families. Assessment was made by comparing the results of the coding of video tape recordings of interactions between mothers and their 5-year-olds in their homes. The experimental group of 30 mothers who had participated in the intervention program, was compared to a control group of 10 mothers with similar low economic and educational backgrounds. The tapes included a 10-minute teaching session and 2-minute story-telling episode for each mother-child dyad. A brief review of research relating children's development to several family and parent variables is presented. The value of using video tapes for naturalistic home observation combined with an independent coding technique is noted. Experimental dyads were found to interact more often than control dyads in the areas of affect, teaching styles, togetherness, and communication. (ED)

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A VIDEOTAPE IN-HOME STUDY OF THE SOCIAL AND EDUCATIONAL TEACHING STYLES OF MOTHERS AND THEIR FIVE-YEAR-OLDS

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Introduction

The general objectives of the study presented in the paper were to determine the effects of an intervention program whose major goal was to further the effective parenting from birth to five years of age of children from low-income, low-education families on maternal teaching styles. The specific objectives of this study were:

1. To assess via videotape records the social interactions and teaching strategies of mothers who have participated in the intervention program in comparison to control group mothers during a teaching task in the home with their five-year-old children.

2. To assess maternal language and story-telling skills with five-year-olds by means of a maternal story-telling episode videotaped subsequent to the teaching task.

3. To demonstrate the feasibility of naturalistic assesments of the effectiveness of maternal social and educational efforts by the technique of using a single person who is able to maintain social rapport while recording mother-child interactions on videotape.

The intervention program, the F.D.R.P. (Family Development Research Program) places particular emphasis on increasing (a) the parental reper-

toire of alternative positive strategies of discipline and social interaction, (b) the family's awareness of the importance of early learning, and (c) active family participation in each child's educational experiences and learning. The FDRP has attempted to accomplish these goals by means of a weekly home-visitation program which utilizes paraprofessional Child Development Trainers (CDTs). The CDTs try to increase the competence and assurance of families in interaction with their children in the areas of nutritional, social, language, health, and cognitive development.

In the area of cognitive development, the objective of the FDRP at Syracuse University was to provide center mothers with teaching techniques that would create a warm, positive environment in which learning could take place. Program objectives did not include prescriptions which would have dictated any precise teaching techniques. In fact, the program stressed that there were alternative methods for the same teaching goal. Mothers were encouraged to devise their own strategies for teaching the tasks the CDTs left with them each week.

Stressed was the idea that learning at home is a continuous, informal activity in which the entire family participates. The Gordon & Lally (1967) manual of stimulation activities for infants and toddlers which was used by the CDTs in the early years of the home visit program, expressed in the introduction, the philosophy "that education is not always the formal activity that goes on in the school room, but the day to day, give and take of people, young and old alike" (p. 3).

The Child Development Trainers continually stressed that parents must work <u>with</u> their children and be <u>supportive</u>, both verbally and physically of a child's <u>efforts</u> even when the children were not successful. It is

interesting to note that reports from Children's Center testers indicate that children of high education parents appear to remain interested and on task until they reach tasks which become difficult. At this time, the children give up and refuse to try . . . apparently afraid of failure. It was a goal of the home visit program to create an environment in which children were not embarrassed by making a mistake but be challenged by difficult tasks to test their own limits.

CDTs stressed that open lines of communication between parents and children were crucial for the cognitive development of the child. They transmitted the idea that a child must be free to express his opinion in order for a mother to understand "where he's at" so that she can then provide information which she feels is necessary for his further development. It was stressed that learning was an interchange of ideas, not a one-way street from adult to child. Evidence of these rearing styles were sought while viewing the videotapes which provide the basic data for this paper.

We realized that a child is far more likely to identify with attitudes and values of his or her parents than with attitudes and values of others. Parents are a child's primary teachers. Yet, as Honig (1975) has recently noted, research into parent-child exchanges has consistently pointed up widespread differences in the abilities of parents to teach their own children effectively (Baumrind, 1967; Bayley & Schaefer, 1960, Bearison & Cassel, 1975; Bee, Van Egeren, Pytkowitz, Nyman, & Leckie, 1969; Bing, 1963; Hess, Shipman, Brophy, & Bear, 1968; Hindley, 1962; Hubner, 1970; Marans & Lourie, 1967; Radin & Kamii, 1965; Shere & Kastenbaum, 1966; Slaughter, 1968. Streissguth & Bee, 1972; Wortis et al., 1963; Wulbert, Inglis, Kriegsman, & Mills, 1975). Brophy (1970)

has demonstrated that maternal teaching styles vary widely, from limited reactive teaching with use of controls and demands, to effective use of suggestions and instructions. Olmstead & Jester (1972) further analyzed maternal-child teaching interactions to discover the dimensions along which such interactions differ. For example, more middle-class mothers in their study provided advanced organizing information about a block-sorting task. These mothers made such clarifying statements as "We are going to learn how to sort these blocks." The mothers not only provided more detailed introductions to the learning task but provided more verbal variety and more explanations or reasons for their corrections of a child's responses. Low-income mothers in this study used predominantly such controls as threats or physical restraints when children were corrected.

Milner (1951) interviewed mothers and children and found that children who achieved higher language scores on the California Test of Mental Maturity were read to more often, had more mealtime conversation with parents, and received less harsh physical punishment.

There is, of course, a large range of variability of behaviors within any gross designation as "social class." In Gordon's home visitation project, the amount of conversation in the home, particularly that directed toward the child, related significantly to child performance on developmental tests (Jester & Bailey, 1969; Resnick, 1973), yet all parents and children involved were from low-income families. Indeed, the long-term critical importance of family process variables as positive enhancers of intelligence and achievement has been highlighted by research across social classes (Willmon, 1969).

Wolf (1964) and Davé (1963) have made a distinction between <u>status</u> and <u>process</u> variables. Status variables are demographic such as income and education level. Process variables relate to intellectual expectations of parents for a child and amount of intellectual facilitation provided.

Wolf has related family process variables to child intelligence and Davé has related the process variables to achievement. They found multiple correlations of .76 and .80 respectively with these child measures when they used predictors such as quality of maternal language, amount of reading and conversation, opportunity for the child to learn new words, and cultural level of home discussions. Linnan & Arassian (1974) have more recently analyzed family home interview and observation data on two different ethnic groups. Ratings based on maternal language style items had the highest multiple correlation (R=.61) with child's verbal ability. Mothers' language was rated by complexity of words, use of abstract rather than concrete speech, conversational context, and amount and regularity of reading to the child.

Schaefer's (1972) review of a variety of longitudinal as well as cross-sectional studies indicated that family process was found to be more highly related to intelligence and achievement than was socioeconomic status. In studies where socioeconomic level of the family was controlled, "children's test scores were much more related to degree of parent interest than to variations in the quality of the schools" (p. 234).

There is increasing awareness of the importance of parents in influencing a child's academic motivation ([illegible], 1973). Zigler (1970) has stressed how important familial-cultural experiences are to a child's educational achievement motivation and emotional systems.

Research on the effects of positive parenting practices in maternal home-rearing situations has added to our information base (Yarrow, Rubenstein, & Pederson, 1971). Beckwith's (1972) observations of adoptive mothers

with infants revealed that high frequency of maternal physical and verbal contacts and low restrictiveness for an infant's explorations were associated with significantly high Cattell IQ scores.

Extensive observations by Watts, Barnett, & Halfar (1973) of the interactions of families of varying social backgrounds with their babies in the natural course of development over several years eloquently support the above findings. "As early as the age of 24 to 27 months the experiences of certain of these children who develop very well intellectually; ("A" children) and others who do not ("C" children) differ strikingly. Mothers, fathers, babysitters and other people who are in contact with these A children spend more time interacting with them in the context of intellectually stimulating activities, more time directly participating in these activities, and more selectively encouraging these activities than interactors with C children" (p. 186-187). These data were found for all of the families involved, regardless of "social class" status.

Swan & Stavros (1973) inquired about parental practices in 40 black low-income families whose five- and six-year-old children exhibited effective learning styles in school. These children were able to listen and use information from adults and other children alike. They worked independently and self-confidently. They asked meaningful and appropriate questions, described their experiences colorfully, and had a noticeable sense of humor.

The parent's philosophy included encouraging independence in the children and understanding and respecting the child's feelings and point of view. These parents expressed feelings of competence in raising their children. The parents fostered independence in the children by giving them

responsibilities around the home. They described their children "in a very positive and competent light . . . . Most of the parents talked with their children about a wide range of topics in a variety of contexts, and shared many verbal episodes that were mutually pleasant" (pp. 34-35). All but three of the parents read to and discussed stories with their children.

From reviewing the literature we have learned that social class differences have been found to correlate with maternal teaching styles, language and social interactions, but that social class does not always dictate the processes used by parents. The critical social class differences found in maternal teaching styles, language, and social interactions by Hess, Shipman, Brophy, & Bear (1969), who videotaped mothers teaching their preschoolers in a laboratory setting, are not expected to be found in the low-income and low-education FDRP group. These families, it was hypothesized,,will not look like the Hess, et al. (1969) lower class families but will exhibit varying styles of maternal teaching, language and social interaction. It is also hypothesized that FDRP families will differ in interaction styles from a low-income and low-education contrast group.

Methods and Techniques

Each family was visited by the principal author with whom the family was already familiar since she had previously visited and interviewed in the home. During this visit a ten-minute videotape recording was made of the mother teaching her child how they could work together to make a triangle using an Etch-a-Sketch toy. An equilateral triangle drawn on a sheet of 8½" x 11" paper, as well as the Etch-a-Sketch toy, were placed in front of the mother and child who were seated side by side on the living room sofa

or at a dining room table with the child on the mother's right side. The following explanations and directions were given to the mothers.

As part of our long-range growth study we are developing a video library of learning patterns that can be viewed repeatedly to help us understand better how children learn. By using tapes one can again and again see the same behaviors and compare the behaviors of one child with those of another for better understanding of all children. These videotapes will be kept in the Children's Center Library.

Mrs. Y, look at the on the paper.

What I'd like you to do is to use the Etch-a-Sketch toy to teach X how to make a triangle as close to that triangle on the paper as possible. You have to cooperate in order to make the triangle. You will be using the left-hand knob which goes across, and X will be using the right-hand knob which goes up and down. It is a difficult task. You will have to turn the knobs <u>together</u> to make the triangle as best you can.

To <u>erase</u>, you just hold the board and shake it hard.

Remember, we want you to make the triangle <u>together</u>.

Subsequently, two minutes of story-telling were videotaped. A large CAT picture of a mother kangaroo with an infant in her pouch and a child kangaroo at her side on a tricycle was given to the mother. Each mother was then requested to make up a story about the picture for her child.

<u>Equipment</u>. The equipment used is the Sony VideoRover II, model AV-4500. The VideoRover II is a completely portable, VTR system that can be carried and operated by one person. The equipment can be either battery operated

or operated on normal 110 household current. In the present study, the equipment was electrically supplied from household current which insured a regulated energy source as well as uniform, high quality recordings without concern about fully charged batteries. At no time did this equipment in any way tax the ability of an ordinary household to supply sufficient current.

The equipment consists of a hand-held videocamera (with zoom lens and built-in electric condenser microphone) supported by a monopod connected to a Videocorder. The Videocorder is used both to record picture and sound and to play them back on a monitor, or, with the optional RF modulator, on a regular TV set.

Lighting was provided by a simple 2-light photography light bar using 375 watt bulbs which provided adequate lighting in each home even during evening home visits.

Subjects

Videotapes of 30 center mothers and their five-year-old children and ten control mothers and their five-year-old children have been collected and analyzed for the present study.

Data Analysis

One method has been used to analyze the present data.

APPROACH is a technique for coding behavior sequences, and the settings in which they are emitted.

Emitted behaviors are coded by dividing the observed behaviors into behavioral clauses, each of which contains four basic components: the subject of the clause (who or what does something), the predicate

(what is done), the object (toward whom or what the action is directed), and some qualifier (adverbial descriptions of the action). Each of those four components is then translated into a numerical code and grouped into a six-digit statement (two digits being required for the predicate and two digits for the adverbial modifiers) which summarizes the subject-predicate-object-adverb involved in a single behavior unit. The complete chain of numerical statements is then keypunched for computer analysis. . . .

> This type of code permits a running sequential picture of actions emitted by the child or the adult who is the central figure of the observation and of behaviors received by him or her. In general, the resulting description is a very fine-grained one containing much that might be considered irrelevant for some types of behavior analysis but at the same time rich in the sort of sequential data essential for true ecological analyses. (Honig & Caldwell, 1974, p. 3)

The APPROACH verbs and adverbs analyzed for this study are listed in Table 1 along with their operational definitions.

Frequency counts of the numerically coded sequential behavioral segments allow one to assess the effectiveness of teaching styles and social interaction techniques employed by center mothers and their children in comparison to low-education, low-income mothers and their children in the control group.

The principal author did not participate in either coding session since the families were previously well-known to her. The members of the coding team had not visited in the homes and were unfamiliar with the families.

Inter-rater reliabilities were computed for agreement on subject (94.5), verb (92), object (93.5) and adverb codes (88). Twenty different taped sessions of 30-second duration were coded by the coders in the reliability study. The overall score for reliability was 91.7.

Results

For this study we have focused primarily on 9 maternal behaviors as assessed by APPROACH coded verbs and 15 maternal styles and ways of carrying out behaviors as assessed by APPROACH adverbial codes. This focus was also carried out for the children's behaviors and styles. Table 2 contains the data on the Center and control group behaviors.

Two independent judges rated each verb in accordance with whether or not there was a relationship of that behavior to FDRP goals. A decision was made to analyze the nine verbs that met this criterion. Some program goals favored increased frequencies of certain parent behaviors. Other goals favored decreases in certain parent behaviors. On six of these nine maternal behaviors the frequency counts were in the direction favoring program goals for the center mothers. No significant differences were found on the verbs coded for mothers.

A decision was also made by two independent judges as to whether the pattern of interacting corresponded with program goals for parents. Fifteen adverbial codes were judged as reflecting program goals. Ten of the 15 adverbial codes reflecting maternal styles of interacting favored the center mothers.

Three of the maternal adverbs, acting in a definitive manner, harshness, and attentiveness, proved significant in the desired direction, that is, in favor of center mothers. One of the adverbs, smilingly, received a significant t ratio in favor of control mothers with respect to program goals.

The same behavioral verb codes and adverbial codes judged as congruent or incongruent with program goals for mothers were used in analyzing the child data. Only one of these differences was found to be statistically significant. Center children made significantly more teaching, labeling, clarifying and explaining statements. These behaviors were coded as "gives basic information."

Thirteen of the 15 adverbial codes reflecting the child's style of interacting favored center children. Two adverbial codes for the child behavior, when analyzed by t test proved significant in the desired direction. These adverbs were "attentiveness," and "acting in a restless or nervous manner." No differences were found to be significant in favor of control children.

One behavior that was of particular interest to FDRP was the amount of time the dyads worked together on task as required by the instructions. In checking the specific 6-digit statement which demonstrates this behavior, it was found that the center children dyad exhibited a higher frequency of these interactive behaviors (1009 for center dyads; 122 for control dyads. This difference was significant at the $p < .001$ level.

This particular behavior could also be seen as reflecting the mother's ability to comprehend and follow verbal directions. The instructions for the task stress at three separate points that the mother and child must cooperate and work <u>together</u> in order to make the triangle. In computing the total number of interactions exhibited by center mothers as compared to the total number of interactions for control mothers, it was found that 17% of the center dyad interactions involved working on task together, while only 7% of the control dyad interactions were working on task together.

Discussion

The APPROACH method is objective by nature--no hard and fast assumptions or predictions about what behaviors will occur are made prior to coding. Each interaction and behavior emitted is coded. When a behavior occurs for which a code has not previously been assigned, the new behavior can be added to the system. No interaction or behavior is thus ever lost. The system also takes into account any part of the environment which influences the central figure.

In the present study the APPROACH system was used to take a microscopic look at each individual tape. When the individual interactions were broken down and compared, differences were found in the areas of affect, teaching styles, togetherness, and communication.

Since the videotape method allows one the discretion to view the same behaviors over and over again, one is not devastated by the possible inadequacy of any individual assessment technique which later proves to be either invalid or inefficient. The original data remain completely intact for later applicating of other assessment methods. Since we have videotaped the time sequences in which we were interested, future data analyses are always possible. The data can be analyzed with different goals in mind each time the tape is viewed. A language expert might look at the language abilities of both mother and child. Someone else might be interested in the efficacy of maternal teaching strategies in helping the child to learn, while another might be interested in the occurrences of distal vs. proximal contacts between mother and child.

The original thesis of this study was to demonstrate the value of the videotape method for naturalistic observations in the home. However, the study has also served to demonstrate the powerful potential of a system

such as APPROACH for analyzing in depth, multifaceted interactions of mothers and children. In a short ten-minute videotape recorded learning task situation, subtle and complex interaction sequences are illuminated and are captured by the microscopic coding system we used. The videotape method and APPROACH complement each other as though they were intended for each other.

The etch-a-sketch task proved difficult for all dyads, but was also interesting and fun. Even when the task is learned it can still be perfected and therefore the mother can continue teaching so that the triangle can be made better and better. The task is excellent for continuous demonstration of teaching and learning during the whole ten-minute period. Additionally, some frustration is always present so that a great range of possible negative as well as positive social interactions is possible.

An in-home videotape technique using a one-person operator has been found to be a reliable and valid method to gather data on maternal social and teaching styles in a learning situation. In evaluating the data, both the center dyad and the control dyad exhibited similar behaviors in their interactions with the interviewer. The highest frequencies of response in this interaction were "smiling" and "at ease." This method of data collection is not only good for research, but not harmful to the relationship with the families visited. It actually helps establish rapport for later interview segments of the home visit.

After each taping, the mother and child are allowed to view and listen to their T.V. debut. Their response has always been enthusiastic and when informed that they would again be taped the following year, they have given resounding approval with assurances they would be better the next time.

Conclusions

The one-person in home videotape method proved to be a reliable method for recording the wide range of mother-child interactional behaviors in a naturalistic setting.

The data collected provides a data bank for future data analysis.

The APPROACH coding technique allows an in-depth microscopic, comprehensive analysis of interactions which occur during any given time period.

Center mothers and children will shown to interact more often in congruence with FDRP goals than the control dyads in the areas of affect, teaching styles, togetherness and communication.

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Table 1

Verbs and Adverbs Used to Compare the Interactive Styles of Mothers and their Five Year Old Children

Verbs

01 attends: looks, focus in an object, person or environment (purposeful)

17 gives basic information: teaching, labeling, clarifying and (simple) explaining statements

e.g. this is a square

move your knob toward the window

this knob moves up/down

this triangle needs some modifications here

32 expresses displeasure: any remark or gesture that shows unhappiness or discontent

e.g. a child whines when mother asks him to do something

crying, pouting

33 blames: any remark that is derogating, critical or accusatory of
criticizes: self, object or other

e.g. you did it the wrong way

you ruin it

it is ugly

I goofed

35 interferes, restricts - physical interference, interruption of activity, holding a person back, etc.

36 resists or rejects criticism - verbal as well as physical resistance to a gesture, comment or statement

e.g., you ruin it → no, I didn't do that

39 expresses frustration: verbal as well as gestural expression of disappointment, frustration, and/or doubt; sighs

e.g., are you sure that this can be done?

we can't do it, forget it

we are not getting anywhere

70 suggests: an implied request, more declarative or interrogative

e.g. would you like to take off your coat?

you need to turn your knob in order to make the triangle

can you erase the board this time?

71 requests: imperative statements, mands. (doesn't leave alternative for the object)

e.g. Renee, turn your knob

get out of here!

come back here!

stop laughing!

Adverbs

04 in a specified manner, time or place: behavior is carried out according to directions

06 imitatively: copying a behavior previously exhibited

09 positive, gently, softly, warmly: with positive affect

11 harshly: severe negative affect

12 passively, helplessly: ineffectively

13 inattentively: without interest

14 impulsively, impatiently

15 confidently: with assurance

16 uneasily, uncertainly, anxiously - worried, apprehensive

17 restless, nervous manner: similar to 16 but more intense

18 mildly: (only used with negative behavior) gentle disapproval

19 smilingly: exhibiting behavior with a smile

20 frustrated manner: discouraged, perplexed

21 firmly: definitive

22 attentively: observantly

23 curious manner: exhibiting curiosity

Table 2

Mean Verb and Adverb Production of 30 Center and 10 Control Mothers and Children

With Tests for Significant Differences

Item	Initiator (subject)	Center mean	Control mean	t
		Verbs		
tempo statement	mother	13.8	18.2	1.1
gives basic information	mother	14.8	12.2	.61
gives basic information	child	3.9	1.2	1.97**
		Adverbs		
in specific manner	child	4.3	1.6	1.35
gently, softly, warmly	mother	36.8	23.1	1.49
gently, softly, warmly	child	10.0	6.7	.49
harshly	mother	.26	2.5	2.05**
passively	mother	4.2	1.6	.8.
passively	child	.6	2.0	1.35
restless, nervous manner	mother	.8	3.0	1.67
restless, nervous manner	child	.9	4.2	2.94***
smilingly	mother	8.6	14.8	1.79*
firmly	mother	3.1	12.9	2.02**
attentively	mother & child	33.6	13.2	3.56****

* $p < .05$
** $p < .03$
*** $p < .005$
**** $p < .001$